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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/932,427	09/17/1997	YOSHIO KITAMURA	1081.1055/JD	5306

7590 07/02/2002

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WASHINGTON, DC 20001

EXAMINER

PORTKA, GARY J

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 07/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PRG

Office Action Summary

Application No.
08/932,427

Applicant(s)
Kitamura

Examiner
Gary J. Portka

Art Unit
2187



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jun 10, 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 5, 7, 9, 11, and 13-16 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 7, 9, 11, and 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 10, 2002 has been entered.

2. Claims 1, 7, and 13-16 have been amended, and claims 4 and 10 have been canceled by Applicant. Claims 1, 3, 5, 7, 9, 11, and 13-16 are pending.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 5, 7, 9, 11, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al., U.S. Patent 5,542,064 (hereinafter "Tanaka"), in view of Joho, U.S. Patent 5,408,634.

5. As to claims 1, 7, and 13-16 Tanaka discloses a *RAID apparatus and control method comprising:*

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- a. *Plurality of disk units (Drives 16-x) storing a plurality of copies of each of data of logical volumes ("identical data"), and disk controller (2) for accessing the disk units at the logical volumes (see Abstract, Figures 1-3, column 2 lines 14-17 and 54-67);*
- b. *The disk controller including a memory storing number of request operations to each disk, and control means comparing these and selecting the single disk having the least, and thus outputs a request to the single minimum waiting disk unit based upon the comparison (see Figure 5, column 6 line 62 to column 7 line 17, and column 8 lines 1-47), where the number is incremented/decremented for each new request/completion (see column 10 lines 19-24 and 44-49);*
- c. *Wherein the disk units perform operations in a queued order (see column 4 lines 42-49, column 7 lines 33-53, and column 8 lines 1-5);*
- d. *Wherein the memory stores the recited table indicating correspondence between disks and logical volumes (see Figure 3, and column 4 line 60 to column 5 line 27; each address designates a logical volume since for example as shown in Figure 3 logical address 2 designates a physical address at A1 that contains a plurality D1 of bytes on disk drive 1 (equals logical volume copy on one disk), or alternatively designates the physical addresses A1, A2, and A3 on three disks (equals the logical volume that spans the disks)) and selection of the disk on which a logical volume is allocated by designation of the logical volume by a high-rank apparatus (CPU, see Abstract, selection indicated in Figure 3).*

Tanaka does not disclose sending of the request to only the single minimum waiting disk unit. The design philosophy of Tanaka is to allow a selection of the lowest waiting disk units, since in

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general it is assumed therein that there are more than one equally minimum least waiting disk units (i.e., more than one disk unit with zero pending operations). However, an artisan would have recognized that if there is a single minimum waiting unit, that this unit should be the one selected, and thus advantageously be the only one sent a request. This concept is taught in an analogous multiple disk system in Joho. As described in the Abstract therein, a new access is queued only in the disk unit having the minimum waiting time. This is well understood in the art to avoid unnecessary bus and queue utilization, thus providing for maximum resource performance. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to send the request to only the single minimum waiting disk unit, because this would avoid unnecessary bus and queue use, and was known in the art previously.

6. As to claims 3 and 9, Tanaka discloses *channel adapter* (4-x and 5) as claimed (see Figure 1, and column 3 lines 58 to column 4 line 1), *device adapter* (14 and 17-x) *for accessing the disk units* (see Figure 1 and column 4 lines 19-21), and *resource manager circuit* as claimed (including MP 11-x, see column 4 lines 13-24).

7. As to claims 4 and 10, Tanaka discloses the *resource manager incrementing and decrementing number of operations of a disk unit* (see column 10 lines 19-24 and 44-49).

8. As to claims 5 and 11, Tanaka discloses *the memory stores status information for the disk units, for use in selecting a normal unit* (see column 7 lines 4-9).

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Response to Arguments

9. Applicant's arguments filed June 10, 2002 have been fully considered but they are moot in view of the new grounds of rejection. Although as previously stated it would appear that a request is sent to only the minimum waiting drive when there is only one drive having zero pending operations, Tanaka does not explicitly describe this situation and so a reference has been added which teaches this.

Conclusion

10. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in Abandonment of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

11. Any inquiry concerning this communication from the examiner should be directed to Gary J. Portka at telephone number (703) 305-4033. The examiner can normally be reached on weekdays from 9:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Do Yoo, can be reached at (703) 308-4908.

Any response to this action should be mailed to (or faxed as provided below):

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Fourth Floor (Receptionist).

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The fax phone number for the organization where this application or proceeding is assigned are as follows:

(703) 746-7238 (After Final communications)

(703) 746-7239 (Official communications)

(703) 746-7240 (Status inquiries, draft communications)

Any inquiry of a general nature relating to this application or proceeding should be directed to the Group receptionist, whose telephone number is (703) 305-3900.

Gary J. Portka
Patent Examiner
June 27, 2002

